

What is claimed is:

1. A one-way, bi-directional clutch, comprising:
 - an outer casing having a first end;
 - an input shaft that is rotationally supported by the first end of the outer casing, the input shaft having a flange with an integral release cam means;
 - an output shaft that is rotationally supported by the second end of the outer casing, the output shaft having a flange with an integral locking cam means;
 - a brake assembly comprising a release cam means that is complimentary to the release cam means of the input shaft, a locking cam means that is complimentary to the locking cam means of the output shaft, and at least one brake pad;
 - wherein the brake assembly is movable between a brake position where the one or more brake pads are in contact with the first end of the outer casing and a release position where the one or more brake pads are not in contact with the first end of the outer casing;
 - wherein the complimentary release cam means of the input shaft and brake assembly are operable to move the brake assembly to the release position when sufficient torque is applied to the input shaft; and
 - wherein the locking cam is operable to move the brake assembly to the brake position when sufficient torque is applied to the output shaft.
2. The one-way bi-directional clutch of claim 1, wherein torque applied to the output shaft is not translated to the input shaft when the brake assembly is in the brake position.
3. The one-way bi-directional clutch of claim 2, wherein torque applied to the input shaft is translated to the output shaft when the brake assembly is in the release position.

4. The one-way bi-directional clutch of claim 3, wherein the locking cam means of the output shaft include at least one locking cam divot located on a flange of the output shaft;

wherein the locking cam means of the brake assembly includes at least one locking cam divot located on a floating locking plate; and

wherein a bearing is disposed between each of the locking cam divots of the output shaft and the corresponding locking cam divots of the floating locking plate.

5. The one-way bi-directional clutch of claim 4, wherein the floating locking plate includes three (3) locking cam divots and the flange of the output shaft includes three (3) locking cam divots, wherein the locking cam divots of the output shaft are complimentary to the locking cam divots of the floating locking plate.

6. The one-way bi-directional clutch of claim 5, wherein at least one of the locking cam divots of the output shaft includes two shallow portions surrounding a deep portion.

7. The one-way bi-directional clutch of claim 5, wherein at least one of the locking cam divots of the floating locking plate includes two shallow portions surrounding a deep portion.

8. The one-way bi-directional clutch of claim 3, wherein the complimentary release cam means of the input shaft include at least one locking cam divot located on a flange of the input shaft,

wherein the release cam means of the brake assembly includes at least one release cam divot located on a locking disc; and

wherein a bearing is disposed between each of the release cam divots of the input shaft and the corresponding release cam divots of the locking disc.

9. The one-way bi-directional clutch of claim 8, wherein the locking disc includes three (3) release cam divots and the flange of the input shaft includes three (3) release

cam divots, wherein the release cam divots of the input shaft are complimentary to the release cam divots of the locking disc.

10. The one-way bi-directional clutch of claim 8, wherein at least one of the release cam divots of the input shaft includes two shallow portions surrounding a deep portion.

11. The one-way bi-directional clutch of claim 8, wherein at least one of the release cam divots of the locking disc includes two shallow portions surrounding a deep portion.

12. The one-way bi-directional clutch of claim 8, wherein the input shaft further includes a track having a pre-determined depth that connects each of release cam divots thereon, wherein each the bearings roll onto the track when a pre-determined amount of torque is applied to the input shaft.

13. The one-way bi-directional clutch of claim 8, wherein the locking disc further includes a track having a pre-determined depth that connects each of release cam divots thereon, wherein the bearings roll onto the track when a pre-determined amount of maximum torque is applied to the input shaft.

14. The one-way bi-directional clutch of claim 4, wherein the brake assembly further includes a first and a second biasing member, the first and second biasing members being designed such that the brake assembly is in the brake position when torque is not being applied to the input and output shafts.

15. The one-way bi-directional clutch of claim 1, wherein the complimentary locking cam means of the output shaft and the brake assembly define a slip point; and
wherein the brake pad of the brake assembly slips along the first end of the outer casing when a pre-determined amount of torque is placed on the output shaft.

16. The one-way bi-directional clutch of claim 1, wherein a material is applied to the first end of the outer casing to alter the coefficient of friction between the one or more brake pads and the first end of the outer casing.